

## ionic Equilibrium MCQ Question Answer

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Question: 1. Ionisation constant of formic acid is  $1.8 \times 10^{-4}$  at 298 K. In 0.1 NHC00H the percentage ionisation of HC00H acid is

- Option A. 0.18
- Option B. 42.4
- Option C. 4.24
- Option D. 2.89

Question: 2. Solubility of calcium carbonate is 0.0305 gm/litre.  $K_{sp}$  for  $CaCO_3$  is

- Option A. 0.000305
- Option B.  $193 \times 10^{-8}$
- Option C.  $9.3 \times 10^{-8}$
- Option D.  $93.05 \times 10^{-5}$

Question: 3.  $K_{sp}$  for AgCl (mol wt 143.5) is  $17 \times 10^{-11}$  at 298K. The molar solubility of AgCl at 298 K is

- Option A.  $18.7 \times 10^{-5}$
- Option B.  $2.3 \times 10^{-3}$
- Option C.  $9.90 \times 10^{-3}$
- Option D.  $1.3 \times 10^{-5}$

Question: 4. Strength of an acid depends on

- Option A. hydrolysis
- Option B. concentration of  $OH^-$  ions
- Option C. concentration of  $H^+$  ions
- Option D. no. of moles of base used for neutralisation

Question: 5. 0.1 M acetic acid ionise to an extent of 1.34%. Ionisation constant of acetic acid is

- Option A. 0.00134
- Option B. 1.182
- Option C.  $1.82 \times 10^{-5}$
- Option D.  $2.8 \times 10^{-6}$

Question: 6. Dissociation constant of 0.01 M HCN is  $4 \times 10^{-10}$ . The  $H^+$  concentration in the solution is

- Option A.  $3 \times 10^{-6}$  mole  $lit^{-1}$

Option B.  $2 \times 10^{-6}$  mole  $\text{lit}^{-1}$

Option C.  $5 \times 10^{-10}$  mole  $\text{lit}^{-1}$

Option D.  $5 \times 10^{-8}$  mole  $\text{lit}^{-1}$

Question: 7.  $\text{BaSO}_4$  (Mol. wt 233) has solubility  $0.009 \text{ g lit}^{-1}$  at 298 K. Its solubility product is

Option A.  $1.521 \times 10^{-5}$

Option B.  $152.1 \times 10^{-19}$

Option C.  $1.9 \times 10^{-5}$

Option D.  $15.21 \times 10^{-9}$

Question: 8. Molar concentration of  $\text{Ag}^+$  in an aqueous solution of  $\text{Ag}_2\text{CrO}_4$  at 298K is  $1.5 \times 10^{-4}$   
 $K_{\text{sp}}$ , for  $\text{Ag}_2\text{CrO}_4$  is

Option A.  $1.125 \times 10^{-8}$

Option B.  $2.5 \times 10^{-4}$

Option C.  $2.25 \times 10^{-8}$

Option D.  $1.6875 \times 10^{-12}$

Question: 9. Decinormal solution of acetic acid ionised to an extent of 1.3%. pH of this solution will be ( $\log 1.3 = 0.11$ )

Option A. 3.89

Option B. 2.89

Option C. 4

Option D. 1.0

Question: 10. For the reversible reaction

$\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) = 2\text{NH}_3(\text{g})$   $\Delta H$  is - 93.7 KJ.

The equilibrium will shift in the forward direction if conc. of

Option A.  $\text{NH}_3$  is increased

Option B.  $\text{N}_2$  is decreased

Option C.  $\text{N}_2$  is increased

Option D. temperature is kept variable

Question: 11. An aqueous solution  $\text{CaF}_2$  contains  $2 \times 10^{-4}$  mole  $\text{lit}^{-1}$  of  $\text{CaF}_2$ .  $K_{\text{sp}}$  for  $\text{CaF}_2$  is

Option A.  $16 \times 10^{-8}$

Option B.  $3.2 \times 10^{-11}$

Option C.  $3.2 \times 10^{-6}$

Option D.  $0.156 \times 10^{-2}$

Question: 12. In an aqueous solution of silver bromide concentration of  $\text{Ag}^+$  is  $1 \times 10^{-6} \text{ mol liter}^{-1}$ . If  $K_{\text{sp}}$  for AgBr is

$4 \times 10^{-13}$  then concentration of Br in the solution is

Option A.  $4 \times 10^{-8} \text{ mole liter}^{-1}$

Option B.  $2 \times 10^{-19} \text{ mole liter}^{-1}$

Option C.  $4 \times 10^{-7} \text{ mole liter}^{-1}$

Option D.  $2 \times 10^{-5} \text{ mole liter}^{-1}$

Question: 13. 2 gm of NaOH is dissolved in one litre water. pH of the solution will be

Option A. 12.7

Option B. 11.7

Option C. 1.3

Option D. 17.7

Question: 14. pH of a solution is 10. Hydroxide ion concentration in the solution is

Option A.  $10^{-10} \text{ gm eq.}$

Option B.  $10^{-4} \text{ mole liter}^{-1}$

Option C.  $10^{-4} \text{ gm liter}^{-1}$

Option D.  $10^{-3} \text{ gm eq.}$

Question: 15. pH of 0.1 M monoprotic acid is 4. Then dissociation constant of the acid is :

Option A. 9

Option B.  $10^{-7}$

Option C.  $10^{-5}$

Option D.  $10^{-3}$

Question: 16. If  $\text{NH}_3$  is dissolved in water, pH of the solution

Option A. decreases

Option B. increases

Option C. remains unchanged

Option D. may increase or decrease

Question: 17. According to Bronsted Lowry an acid is

Option A. that gives cation in solution

Option B. one that gives  $\text{H}^+$  ions in solution

Option C. electron acceptor

Option D. proton donor

Question: 18. An aqueous solution of sodium acetate is

- Option A. amphoteric
- Option B. halogenic
- Option C. alkaline
- Option D. acidic

Question: 19. Acetic acid is weak acid because it is

- Option A. organic acid
- Option B. immiscible with water
- Option C. slightly ionised
- Option D. viscous

Question: 20. pH of 0.1 M monobasic acid is 4 then molar concentration of  $H^+$  per litre will be

- Option A.  $10^{-8}$
- Option B.  $20 \times 10^5$
- Option C.  $10^{-3}$
- Option D.  $10^{-4}$

Question: 21. On dissolving copper sulphate in water pH of the solution

- Option A. decreases
- Option B. increases
- Option C. remains unchanged
- Option D. may increase or decrease

Question: 22. On dissolving sodium chloride in water pH of the solution

- Option A. decreases
- Option B. increases
- Option C. remains unchanged
- Option D. increase or decreases

Question: 23. Degree of ionisation depends on

- Option A. temperature
- Option B. nature of solvent
- Option C. neither (a) nor (b)
- Option D. both (a) and (b)

Question: 24.  $CH_3COOH + H_2O \rightleftharpoons H_3O^+ + CH_3COO^-$

In the above reaction acid is

- Option A.  $H_3O^+$
- Option B.  $H_2O$
- Option C.  $CH_3COOH$
- Option D.  $CH_3COOH$  and  $H_3O^+$

Question: 25. Ostwald dilution law is applicable for :

- Option A. weak electrolytes
- Option B. strong electoratorate
- Option C. basic
- Option D. acids

Question: 26. pH of 0.001 M NaOH aqueous solution is

- Option A. 2
- Option B. 5
- Option C. 11
- Option D. 9

Question: 27. On dissolving sodium carbonate in water pH of the solution

- Option A. decreases
- Option B. increases
- Option C. remains unchanged
- Option D. may increase or decrease

Question: 28. pH of a solution is 8.5. solution is

- Option A. amphoteric
- Option B. neutral
- Option C. acids
- Option D. basic

Question: 29. Sum of pH and pOH of an acidic solution at 25°C is

- Option A. 0
- Option B. 14
- Option C. depends on pH of base
- Option D. depends on pH of acid

Question: 30. During salt analysis  $\text{NH}_4\text{OH}$  is added before adding  $\text{NH}_4\text{OH}$  for third gp., cation analysis so as to

- Option A. increase the concentration of  $\text{OH}^-$  ions
- Option B. increase the concentration of ammonia
- Option C. increase the concentration of chloride ions
- Option D. prevent the precipitation of hydroxides of subsequent groups

|    |   |  |
|----|---|--|
| 1  | C |  |
| 2  | C |  |
| 3  | D |  |
| 4  | C |  |
| 5  | C |  |
| 6  | B |  |
| 7  | A |  |
| 8  | D |  |
| 9  | B |  |
| 10 | C |  |
| 11 | B |  |
| 12 | C |  |
| 13 | A |  |
| 14 | B |  |
| 15 | B |  |
| 16 | B |  |
| 17 | D |  |
| 18 | C |  |
| 19 | C |  |
| 20 | D |  |
| 21 | A |  |
| 22 | C |  |
| 23 | D |  |
| 24 | D |  |
| 25 | A |  |
| 26 | C |  |
| 27 | A |  |
| 28 | D |  |
| 29 | B |  |
|    |   |  |